REMARKS

By the present amendment and response, claims 12-71, which are directed to a non-elected invention, are expressly canceled. New claims 72-76 have been added; new claims 72, 73, 74, and 75 are the independent form, respectively, of claims 4, 5, 6, and 7, which include all of the limitations of base claim 1,while new claim 76 corresponds to dependent claim 8. New claims 72-76 are thus allowable according to the Examiner's comments on page 3 of the Office Action dated October 3, 2003. Thus, claims 1, 3-11, and 72-76 are pending in the present application and claims 72-76 are now in condition for allowance. Reconsideration and allowance of outstanding claims 1 and 3-11 in view of the following remarks are requested.

In the Office Action dated October 3, 2003, the Examiner has ***finally rejected*** claims 1, 3, and 9-11 pending in the application on the basis of new ground(s) of rejection and newly cited art. Applicant respectfully requests reconsideration and withdrawal of the finality of the rejection of the Office Action dated October 3, 2003.

A good and sufficient reason why the present response is necessary and was not earlier presented is that an entirely new reference has been cited in the present final rejection dated October 3, 2003 (37 CFR §1.116(c)). The new reference is James R. Janesick (USPN 5,077,592) (hereinafter "Janesick"), which is for the first time brought to Applicant's attention by means of the present ***final rejection*** dated October 3, 2003. The new reference, i.e. Janesick, was not cited in the present application prior to the instant final rejection. Since Janesick is a reference upon which the Examiner has now relied,

Applicant believes that it would be manifestly unfair for the Patent Office not to consider Applicant's arguments, which are necessitated due to the newly cited reference, Janesick.

The Examiner has rejected claims 1, 3, and 9-11 under 35 USC §102(b) as being anticipated by Janesick. For the reasons discussed below, Applicant respectfully submits that the present invention, as defined by independent claim 1, is patentably distinguishable over Janesick.

The present invention, as defined by independent claim 1, teaches, among other things, a pinned transfer gate formed by an implanted P type region within an implanted N type transfer region, where a P type substrate surrounds the N type transfer region, and where the transfer gate is disposed to transfer charge between the photoreceptor and a sense node. As disclosed in the present application, the present invention provides an imager cell comprising a pinned transfer gate, which can comprise an implanted P type region in an implanted N type transfer region, situated between a photoreceptor and a sense node. As disclosed in the present application, the implanted P type region is "pinned" to a potential of the P type substrate, which sets up a potential well profile that allows charge to transfer through the pinned transfer gate depending on the photoreceptor readout clock.

As further disclosed in the present application, photons incident on the photoreceptor produce electrons that are captured in an integration potential well, which is established in the photoreceptor by an integration voltage V+. After the integration period, a readout potential well is established, which is shallower than the transfer

potential well that is established by the pinned transfer gate. As a result, electrons captured by the integration potential well propagate through the transfer potential well and into the sense node potential well, where they (i.e. the electrons) can be read by, for example, a source follower output amplifier coupled to the sense node. Thus, the present invention provides a novel imager cell that advantageously allows charge to be integrated in a photoreceptor and transferred from the photoreceptor to a sense node via a pinned transfer gate by establishing different potential wells.

In contrast to the present invention as defined by independent claim 1, Janesick does not teach, disclose, or suggest a pinned transfer gate formed by an implanted P type region within an implanted N type transfer region, where a P type substrate surrounds the N type transfer region, and where the transfer gate is disposed to transfer charge between the photoreceptor and a sense node. Janesick specifically discloses an open pinned-phase pixel of a CCD pixel array comprised of silicon n-channel 10 epitaxially grown on substrate 11 and divided into three regions: two clocked regions defined as phase $\varphi 1$ and $\varphi 2$ gate regions, and an open pinned-phase region OPP. See, for example, column 4, lines 7-12 and Figure 1 of Janesick. In Janesick, during charge integration, phase $\varphi 1$ and $\varphi 2$ gates are held at a potential that is negative with respect to the open pinned-phase region OPP, which forces integration (i.e. collection) of electrons to take place within the open pinned-phase region OPP. See, for example, Janesick, column 4, lines 61-65. In contrast, in the present invention, integration or collection of electrons occurs in the photoreceptor.

In Janesick, after charge is collected in the open pinned-phase region OPP of a pixel in a CDD pixel array, the charge is transferred to the phase φ1 and φ2 gate regions and the open pinned-phase region OPP of the next pixel in the CDD pixel array by using a two-phase clock transfer cycle. See, for example, Janesick, column 5, lines 12-39. Thus, in Janesick, charge is collected in the open pinned-phase region OPP of one pixel in a CCD pixel array and transferred to the open pinned-phase region OPP of the next pixel in the CCD pixel array. Thus, in Janesick, a pinned transfer gate is not disposed between a photoreceptor and a sense node of an imager cell for transfer of charge between the photoreceptor and the sense node as required by independent claim 1. Furthermore, Janesick fails to teach, disclose, or suggest an imager cell comprising a pinned transfer gate that is disposed to transfer charge between a photoreceptor and a sense node.

For the foregoing reasons, Applicant respectfully submits that the present invention, as defined by independent claim 1, is not suggested, disclosed, or taught by Janesick. As such, the present invention, as defined by independent claim 1, is patentably distinguishable over Janesick. Thus claims 3-11 depending from independent claim 1 are, *a fortiori*, also patentably distinguishable over Janesick for at least the reasons presented above and also for additional limitations contained in each dependent claim.

Based on the foregoing reasons, the present invention, as defined by independent claim 1 and claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, claims 1 and 3-11 are patentably distinguishable over the art cited by the Examiner. For all the foregoing reasons, an early allowance of outstanding claims 1 and 3-11 and an early Notice of Allowance for all claims 1, 3-11, and 72-76 remaining in the present application is respectfully requested.

Respectfully Submitted,
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